

Application No. 10/674455
Amendment Dated September 12, 2006
Reply to the Office Action dated April 19, 2006

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1-19. (cancelled)

20. (currently amended) A radio base station apparatus provided with an array antenna having a plurality of antenna elements for calibrating a phase difference among the array antenna elements, comprising:

a probe signal adding unit which ~~adds~~ divides a one probe signal and adds the divided probe signals to each of receive signals received by said plurality of antenna elements;

a probe ~~data signal~~ extracting unit which extracts the probe ~~signal~~ data from said receive signals added with the probe signal;

a phase calibration calculation unit which calculates correlating phase calibration values required for calibrating a phase of each receive signal based on the probe ~~data signal~~ extracted by said probe signal extracting unit; and

a phase calibration unit for calibrating a phase difference among the array antenna elements by calibrating said phase of the each receive signal based on the phase calibration from said phase calibration calculation unit.

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21. (currently amended) The radio base station apparatus according to Claim 20, wherein:

said probe signal extracting unit comprises a despreading unit which dispreads ~~despreads~~ the receive signals added with said probe signal to extract said probe signal.

22. (previously presented) The radio base station apparatus according to Claim 21, wherein:

said probe signal adding unit comprises:
a probe signal generating unit which spreads probe data with
a predetermined spread code to generate the probe signal
a conversion unit which converts said probe signal to a radio signal; and
a coupling unit which couples the probe signal converted to said radio signal
and said receive signals; and

said despreading unit performs despreading on signals outputted from said
coupling unit, using the same spread code used in said probe signal generating unit, in
order to extract the probe data; and

said phase calibration calculation unit calculates the phase calibration
required for calibrating the phase of each receive signal based on the probe data
extracted by said despreading unit.

23. (previously presented) The radio base station apparatus according to Claim 22, wherein:

said phase calibration calculation unit compares the probe data extracted by

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said despreading unit and the original probe data inputted to said probe signal generating unit, calculates quantity of distortion given to the probe data extracted by said despreading unit, and calculates the calibration that cancels said quantity of distortion; and

said phase calibration unit calibrates the receive signals based on said calibration.

24. (previously presented) The radio base station apparatus according to Claim 22, further comprising:

a power control unit that controls power of the probe signal generated by said probe signal generating unit and outputs the probe signal that has been subjected to the power control to said conversion unit.

25. (previously presented) The radio base station apparatus according to Claim 21, wherein:

a spreading rate of said probe signal is larger than spreading rates of other communication signals.

26. (previously presented) The radio base station apparatus according to Claim 20, wherein:

said probe signal is a sine wave.

27. (previously presented) The radio base station apparatus according to

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Claim 20, further comprising:

an amplitude calibration calculation unit which calculates amplitude calibration required for calibrating amplitude of each receive signal based on the probe signal extracted by said probe signal extracting unit; and

an amplitude calibration unit which calibrates an amplitude of said each receive signal based on the amplitude calibration from said amplitude calibration calculation unit.

28 - 33. (cancelled)